New Fabrication Method of Woodpile 3D Photonic Crystals

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Thus far, we have developed 3D photonic crystals (PCs) by wafer-fusion of striped layers [1], and investigated the light propagation and light emission phenomena [2]. In this symposium, we propose a new fabrication method of 3D PCs, which can be combined with the wafer-fusion technique. A drilling method is employed in stead of stacking of individual stripes. Fig.1 illustrates the method, where double etching process in the orthogonal directions [110] and [$1\bar{1}0$] is performed to form woodpile structure.

The method can be combined with the wafer-fusion technique, and various defects and light emitters can be easily introduced. The details will be reported at the symposium.

[1] S. Noda, K. Tomoda, N. Yamamoto, and A. Chutinan, *Science*, **289**, 604 (2000).
[2] S. Ogawa, M. Imada, S. Yoshimoto, M. Okano, and S. Noda, *Science*, **305**, 227 (2004).

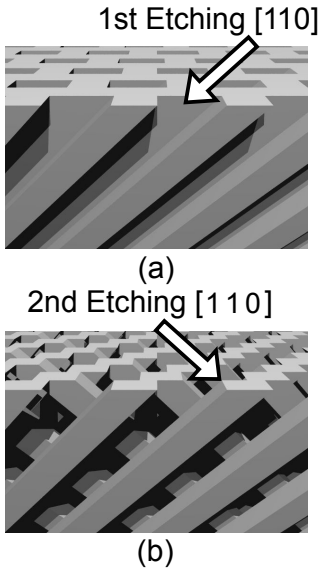

Fig.1. Double etching process in two orthogonal directions: (a) [110], (b) [$1\bar{1}0$].